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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/758,716	01/16/2004	Joy Sawyer Bloom	AD6950USNA	6558

23906 7590 05/29/2007

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EXAMINER	
WOLLSCHLAGER, JEFFREY MICHAEL	
ART UNIT	**PAPER NUMBER**
1732	
MAIL DATE	**DELIVERY MODE**
05/29/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/758,716	BLOOM ET AL.	
	Examiner	Art Unit	
	Jeff Wollschlager	1732	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *14 March 2007*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-4* is/are pending in the application.

4a) Of the above claim(s) *2-4* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on March 14, 2007 has been entered.

Response to Amendment

Applicant's amendment to the claims filed on March 14, 2007 has been entered. Claim 1 is currently amended and under examination. Claims 2-4 remain withdrawn from further consideration.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claim 1 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The limitation, "as to cause minimal melt flow and shear stress in the mold and thereby avoid the formation of an anisotropic part" is unclear as to its limiting effect. It is unclear what amount of melt flow and shear stress may be applied to the molding compound. For the purposes of examination, the limitation is interpreted in two ways: 1) A process that discloses the claimed process steps and

discloses the isotropic properties as claimed is understood to meet the claim limitation of "minimal". 2) A process that employs the same/preferred "mold or molding device" disclosed in the specification (i.e. compression mold) along with the other claimed process steps is understood to support a *prima facie* conclusion that the part meets the claimed physical property limitation of isotropy.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claim 1 is rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Rubin et al. (US 5,981,007).

Regarding claim 1, Rubin et al. disclose a method of producing an extruded thermotropic liquid crystal polymer (col. 5, lines 31-62) as a multiaxially oriented film (Abstract; col. 1, lines 21-32; Figure 2C) in order to tailor the coefficient of thermal expansion (CTE) to optimize properties and produce a film having a planar rather than a fibrillar morphology (col. 1, lines 34-38; col. 2, lines 3-6; col. 3, lines 14-44). The thermotropic liquid crystal polymers are in powder form (col. 15, lines 5-10), are mixed with other powdered resins (col. 15, lines 5-10), are extruded as a melt (col. 3, lines 39-44), and are cooled at the exit of the extruder (col. 10, lines 24-30). Accordingly, the multiaxially oriented film is understood to meet the limitation of forming a solid isotropic part (col. 7, lines 28-57; col. 8, lines 18-20).

Alternatively, Rubin et al. disclose controlling and tailoring/optimizing the coefficient of thermal expansion of the film in multiple directions, as desired, to produce a product suitable for its intended use (col. 8, lines 18-20; col. 5, line 62-col. 6, line 45). At the time of the claimed invention, it would have been obvious to produce the multiaxially oriented film such that the CTE's in various directions were substantially the same, as is strongly implied in the reference (col. 3, lines 14-35), to produce a product with balanced properties not limited to the conventional products associated with the anisotropic nature of thermotropic liquid crystal polymers.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claim 1 is rejected under 35 U.S.C. 103(a) as being unpatentable over Miller et al. (US 6,024,126) in view of Koshal (Manufacturing Engineers Reference Book, 1993) and Baird et al. (Polymer Processing, 1995).

Regarding claim 1, Miller et al. disclose a method of producing a uniform cross section thermoplastic compressor valve (Abstract). Miller et al. disclose employment of aromatic polyester liquid crystalline materials (col. 6, lines 25-30) in a method comprising: filling a mold with polymeric resin powder and compression molding the powder to make an integral unit. Miller et al. do not disclose the specific conditions regarding the compression molding process nor the degree of flow/shear in the process. However, Koshal discloses that compression molding consists of heating a polymer, including powder forms (Figure 2.20), to its melting point and forming the product under pressure (page 2/28, section 2.6.3). The product and the mold are ultimately cooled (page 2/28, section 2.6.3). Further, Baird et al. disclose that compression molding typically involves very little flow (page 284).

Therefore it would have been *prima facie* obvious to one having ordinary skill in the art at the time of the claimed invention to have employed a conventional compression molding technique, such as is disclosed by Koshal, to practice the generically disclosed compression molding method of Miller for the purpose of effectively practicing compression molding as is routinely practiced in the art. Further, as shown by Baird et al., compression molding is known to typically involve very little flow. The examiner further notes that the instant specification lists one of the products made by the method as being a valve.

Accordingly, the examiner maintains that the evidence of record supports a *prima facie* conclusion that the product produced by the method as set forth above in view of the combined prior art meets the broadly defined "isotropic" limitation instantly claimed.

Response to Arguments

Applicant's arguments with respect to claim 1 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

US 5,507,990 discloses that XYDAR®, an aromatic polyester liquid crystal polymer has an average particle size of 1 – 10 um. US 6,120,854 discloses that VECTRA® LCP has a particle size from about 30 – 70 microns.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jeff Wollschlager whose telephone number is 571-272-8937. The examiner can normally be reached on Monday - Thursday 7:00 - 4:45, alternating Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Christina Johnson can be reached on 571-272-1176. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

JW

Jeff Wollschlager
Examiner
Art Unit 1732

May 22, 2007

CHRISTINA JOHNSON
SUPERVISORY PATENT EXAMINER
5/24/07